

## **DETAILED ACTION**

### ***Claim Objections***

Claim 10 is objected to for "immersing a water washed soybean in immersion water".

This phrase has been repeated in the same claim. Correction is required.

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 10-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 10 is indefinite for "the crushed soybean dispersed in the mixture solution is dispersed by using the enzyme". It is unclear what is meant by the whole phrase. It is not clear what the applicant regards as the invention.
4. Claim 10 is indefinite for "crushing the steamed soybeans together with the immersion water". The scope of the claim is confusing given that it is not clear how a slurry of individual soybean cells is obtained if the soybeans are crushed. It is unclear what the applicant regards as the invention.
5. Claim 11 is indefinite for "the crushed soybean dispersed in the mixture solution is decomposed by using the enzyme". It is unclear what is meant by the whole phrase. It is not clear what the applicant regards as the invention.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 10—25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akazawa (US 2002/0197350; hereinafter R1) in view of Oomura et al. (US 6,342,256; hereinafter R2).

8. R1 discloses a method of processing soybean by use of an enzyme. (Abstract)

9. R1 describes the method as follows: A predetermined amount of soybeans is washed with water and then soaked in water. It is preferred to soak the soybeans in water for a time period of 12-15 hours. The water may contain a small amount of pectinase in this soaking step. [0025]

10. R1 discloses that the soybeans are heated in the presence of water. This step is performed to inactivate the action of lipoxygenase contained in soybeans and improve the digestion absorption coefficient of proteins for human consumption. It is preferred to steam the soybean at 120°C for 10 minutes by use of a pressure cooker. [0026].

Depending on the available equipment and resources, it is clear that the time and temperature for cooking can be manipulated and optimized in order to inactivate the lipoxygenase in the soybeans.

11. R1 discloses that after cooling the steamed soybean, water and pectinase produced by the genus *Bacillus* are added to the soybean to obtain a first mixture. The

amount of pectinase added is within a range of 0.05 to 0.2% by weight of the dry soybeans [0027].

12. The first mixture is held for 30 minutes at 60C. while being agitated to achieve the enzyme treatment. Maximum activity of the pectinase of the genus bacillus is achieved at 60C. This enzyme treatment will affect the protopectin and the soybean cells can be efficiently separated from each other without destroying cell walls of the soybean. [0028]

13. The agitating operation should be performed to such a degree that the soybean cells are not destroyed. This is mildly done at 20-30 rpm. Therefore the agitation is smoothly performed and the enzyme treatment will produce a slurry in which single cells of the soybean are dispersed. [0029] While R1 does not mention a pneumatic agitation as presently claimed, it is obvious to those of skill in the arts to used air for agitation purposes to effectuate a gentle agitation of the beans.

14. The inactivation of the enzyme is performed by heating the slurry at about 100C for 15 minutes. [0030]

15. R1 teaches of the drying process wherein spray drying can be employed. Given that the spray drying can be employed, the low moisture level in the product as presently claimed will be intrinsically achieved.

16. R1 gives an example where the pressure employed for heating the soybeans is 1.1 kg/cm<sup>2</sup>

17. It is noted that soybeans contain a high concentration of all tocopherols, such compounds give natural protection against oxidation. Adding tocopherol to the slurry is

an obvious addition to protect the product containing oil from oxidation. However, the amount of added tocopherol for protection against oxidation is known in the arts and will usually fall in the range of concentration as presently claimed.

18. R1 is silent regarding crushing the steamed soybeans and micropulverizing the slurry of soybean.

19. R2 discloses a process for making soybean milk where the ratio of the weight of the soaking water to the weight of soybean is 3 to 1. The soaked soybeans are ground together with water by a grinder. (Col. 4, Example 1). It is clear that grinding (crushing) can be controlled to obtain soybean pieces of various sizes including the particle size range as presently claimed.

20. The grinding stage as disclosed by R2 will produce a slurry which can be further micropulverized using a proper mesh size as presently claimed. Micropulverization is carried out in order to make uniform particle sizes.

21. Making a powdered soybean product by treating soybeans with pectinase of *Bacillus* origin is clearly disclosed by R1. R2 gives the water-bean ratio and how the soaked beans are ground to make a slurry. Therefore it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to follow the teachings of R1 and add some process features as disclosed by R2. Absent any evidence to contrary and based on the combined teachings of the cited references, there would be a reasonable expectation of success in preparing a soybean product as presently claimed.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HAMID R. BADR whose telephone number is (571)270-3455. The examiner can normally be reached on M-T 5:00 to 3:30 (Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on (571) 272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Hamid R Badr  
Examiner  
Art Unit 1794

/Callie E. Shosho/  
Supervisory Patent Examiner, Art Unit 1794